

Internet Use in Macao: The 2006 Annual Survey Report

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PART I. EXPLANATORY NOTES

1. The term **Internet Users** in the current study is defined differentially by two criteria for purpose of comparison. The first definition originates in the World Internet Project (WIP), which asked Macao residents between 18 and 84 (the age range was between 18 and 74 before 2005) the question “Are you using the Internet?” (hereafter the “WIP definition”); The second criterion for definition is adopted from the China Internet Network Information Center (CNNIC), which widened the age range (6 to 84) and only counted those whose frequency of Internet use exceeds “one hour on average per week” (the “CNNIC definition”). The WIP definition has been used in our surveys since 2001 while the CNNIC definition was added in 2003 and used since for comparison with the CNNIC definition. Differences between the two definitions whenever cited are believed to be the sole factor accounting for observed statistical differences in survey results.
2. The term **Online Computers** refers to desktop and/or notebook computers at home that are connected to the Internet. Other Internet-ready handheld devices such as Pocket PCs or mobile phones with PDA functions are excluded from analysis.
3. This report is part of a larger research program, the Macao Internet Project (MIP), funded by the Research Committee of the University of Macau. Views expressed in the report do not represent those of the funding organization. The databank was last updated in December 17, 2006.

PART II. SURVEY FINDINGS

A. Internet Growth in Macao: An Overview

a. Household Online Computers

Total households ⁽¹⁾ (000)	Online PCs (000)	Dialup PCs ⁽²⁾ (000)	Broadband PCs ⁽³⁾ (000)
159	115	12	102
% of total households	72%	7%	64%
% of online households	100%	10%	89%

Notes: (1) The number of total households was calculated based on the total population of Macao and the average heads of each household.

(2) and (3) Figures cited here exclude those using leased lines, wireless or mobile phones to go online.

	Online PCs	Dialup PCs	Broadband PCs
2003	57%	30%	27%
2004	59%	23%	35%
2005	62%	12%	49%
2006	72%	7%	64%

Note: Percentages in the table are based on total households

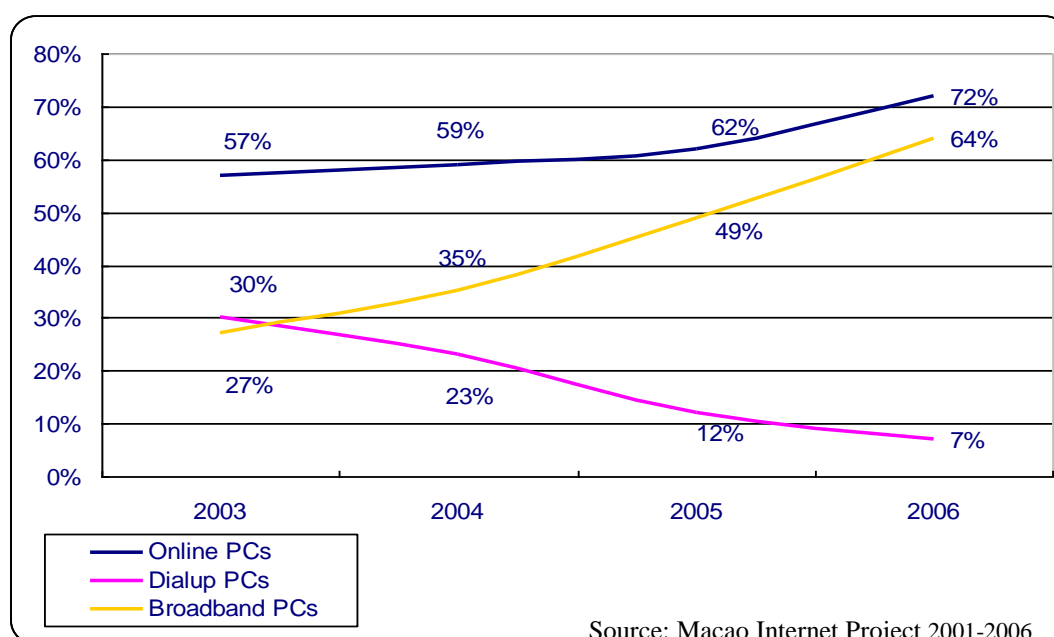


Chart 1.1 Growth of Online Computers

	Broadband	Dialup	Others (including leased line, wireless etc.)
2001 ⁽²⁾	22%	78%	0%
2003	47%	51%	2%
2004	60%	39%	1%
2005	79%	20%	1%
2006	89%	10%	1%

Notes: (1) No survey was conducted in 2002.

(2) By WIP definition.

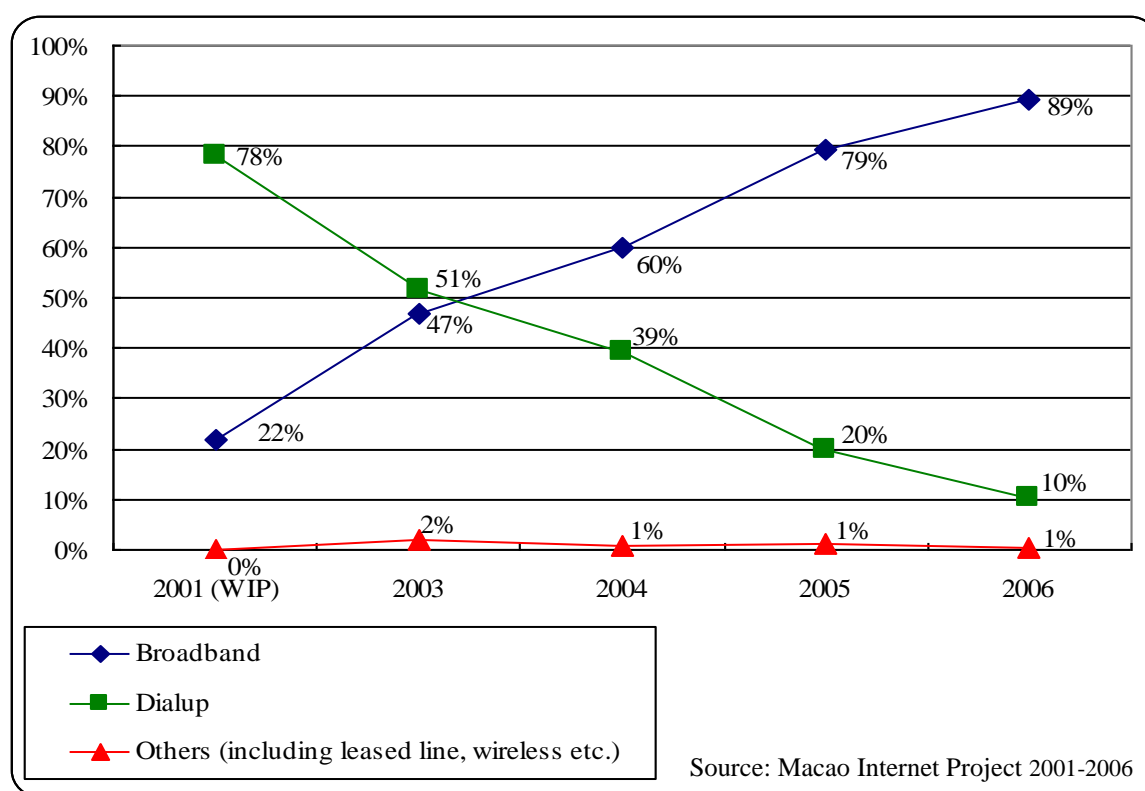


Chart 1.2 Changes in Internet Connection Methods

By the end of 2006, the number of online computers reached 72% of the total households in Macao, an increase of 10 percent points comparing to the same period of 2005. Among all online computers, 89% were broadband PCs while 10% were dialup PCs. Between 2001 and 2006, broadband PCs increased from 22% to 89%, securing the place as the most widely-adopted Internet connection method.

b. Number of Internet Users and Penetration Rate in Macao

By the CNNIC definition, there were 260,000 Internet users in Macao in 2006, or 54.8% of the

population (i.e., 47,500 regular residents) aged between 6 and 84. Taking sampling error ($\pm 2.4\%$) into consideration, the actual number of Internet users may vary from 249,000 to 272,000.

By the WIP definition, the figure was somewhat smaller, 198,000 in 2006, about 50.7% of the population (i.e., 39,100 regular residents) between 18 and 84. Again, taking sampling error ($\pm 2.7\%$) into consideration, the actual number may vary between 188,000 and 209,000.

	Users	Disconnected User	Non-Users
2001 ⁽¹⁾	32.9%	15.0%	52.0%
2003	39.5%	10.0%	51.0%
2004	46.2%	8.0%	46.0%
2005	52.7%	6.9%	40.4%
2006	54.8%	7.1%	38.1%

Notes: (1) By WIP definition.

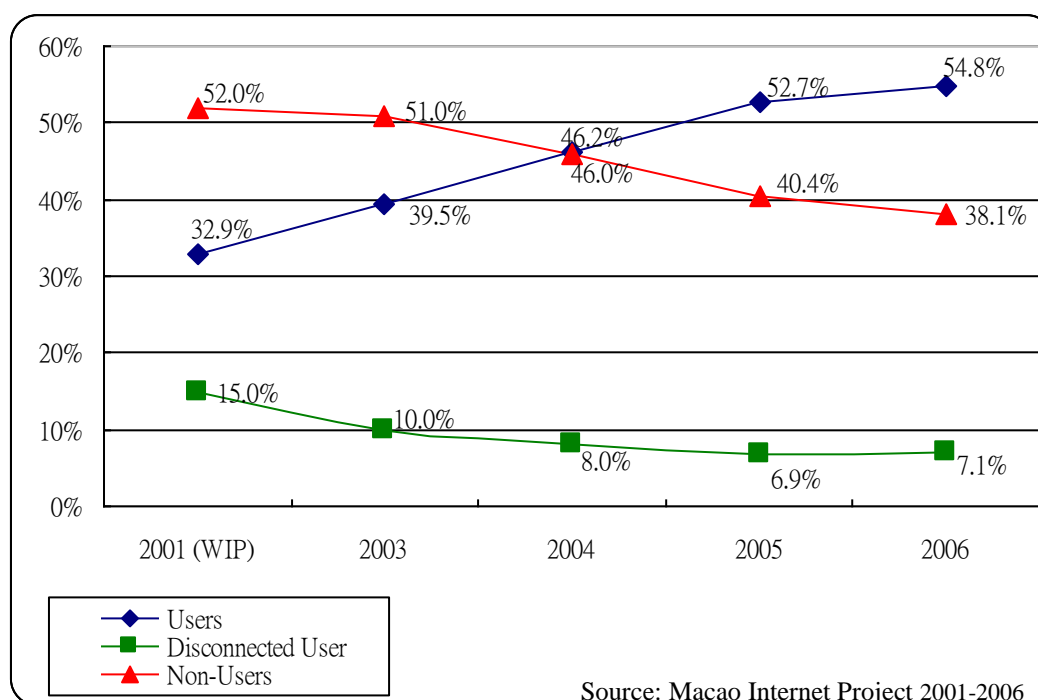


Chart 1.3 Growth of Internet Users and Non-Users

As shown in Table 1.5, one can see a clearly sustainable growth in Internet penetration rate in Macao. In 2006, Internet penetration rate was estimated at 54.8%, an impressive climb compared with 32.9% five years before. However, increase in the pace of adoption was a lackluster 2.1 percent points compared to the same period in 2005, suggesting a slackening process or possibly a ceiling effect..

The Internet penetration rates shown in Table 1.5 were self-reported results by survey respondents (from 2001 to 2006) based on their online experience (from 1995 to 2000).

Year	Penetration Rate
1995	3%
1996	4%
1997	6%
1998	10%
1999	16%
2000	25%
2001	33%
2002	36%
2003	40%
2004	46%
2005	53%
2006	55%

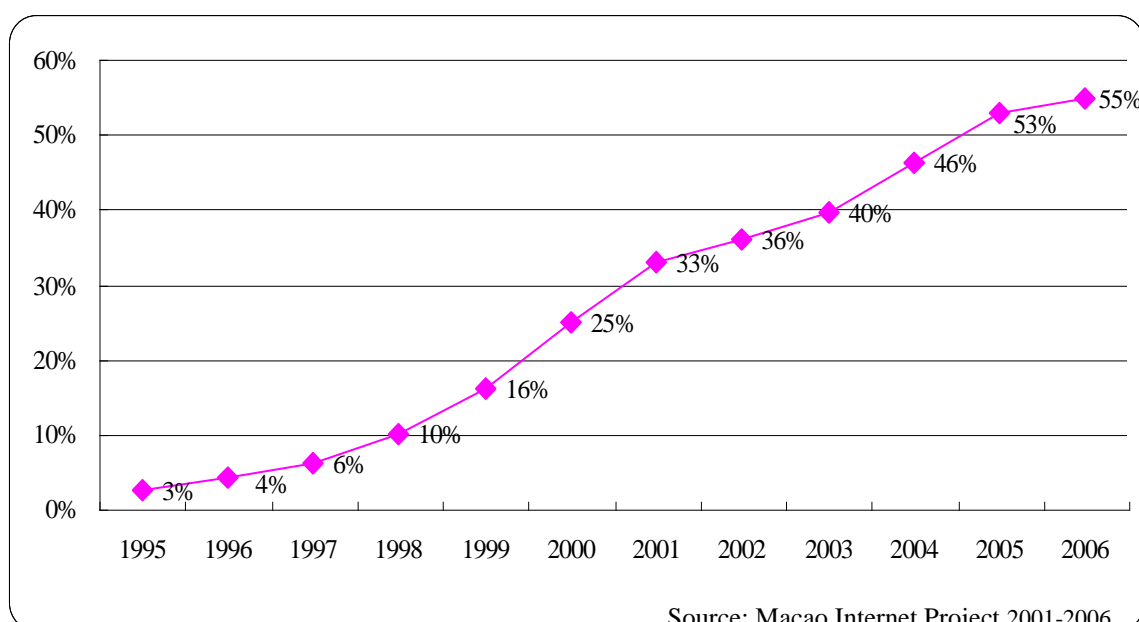


Chart 1.4 Annual Growth of Internet Users in Macao

c. Internet Penetration Rate by Demographics

1. By Gender

	2003	2004	2005	2006
Male	42%	49%	53%	59%
Female	37%	43%	53%	52%

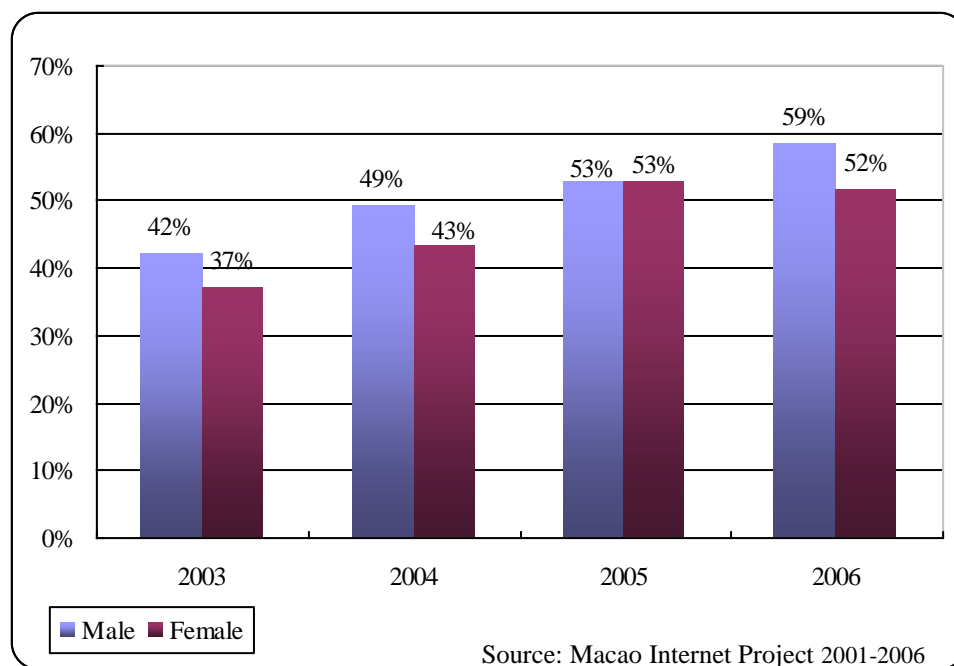


Chart 1.5 Internet Penetration Rate by Gender

As shown in Table 1.6, the Internet penetration rates were nearly identical for both men and women in 2005, averaging 53%, with a discrepancy of about 7 percent points in favor of men in 2006.

2. By Age

	2003	2004	2005	2006
below 18 years old	44%	67%	74%	82%
18-24 years old	84%	88%	95%	94%
25-30 years old	70%	78%	81%	88%
31-35 years old	48%	59%	61%	68%
36-40 years old	40%	41%	56%	54%
41-50 years old	20%	22%	33%	33%
51-60 years old	14%	9%	18%	17%
above 60 years old	1%	1%	6%	7%

Table 1.7 shows a steady tendency of increase in penetration rates from 2003 to 2005, although the slope flattened out and tapered off in 2006, with the possible exception of the age groups under 18, 25 to 30 and 31 to 35. Generally speaking, significant differences were observed among age groups across the surveyed years and the penetration rates decreased as age increased, from the rate of 94% in the age group of 18-24 to the rate of 7% in the age group of above 60, except the age group of 18 and under.

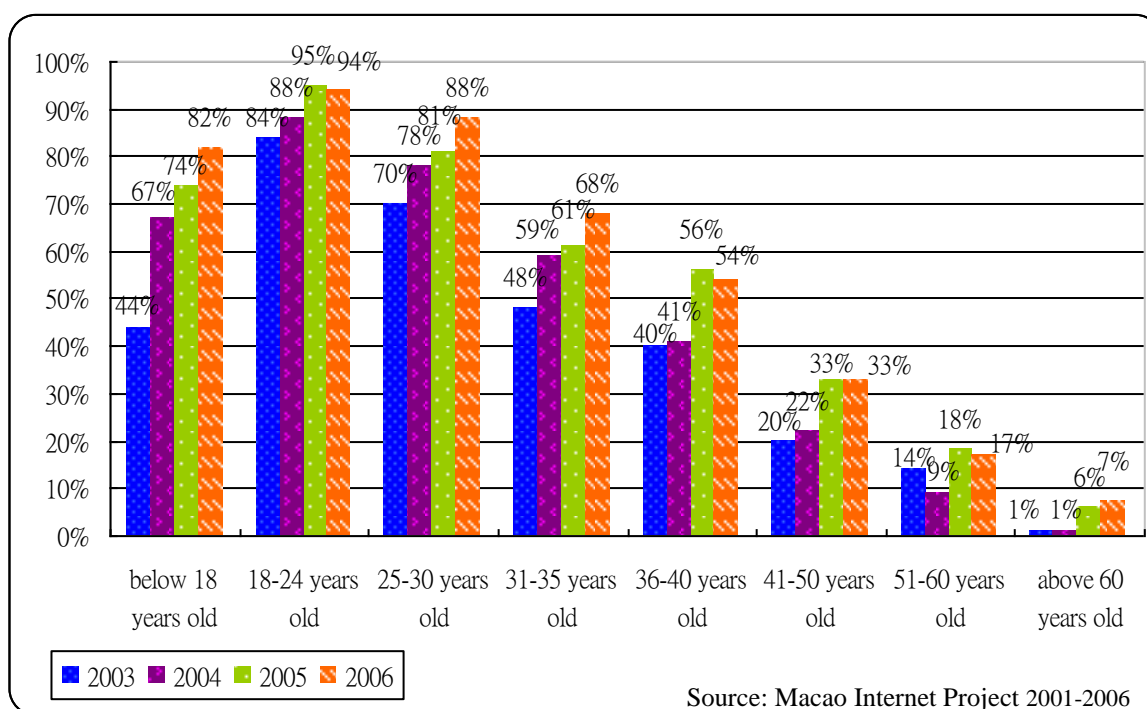


Chart 1.6 Internet Penetration Rate by Age

3. By Occupation

	2003	2004	2005	2006
Managerial, Professional and White Collar	72%	78%	83%	78%
Public Servants	68%	88%	81%	89%
Students	54%	72%	80%	86%
Self Employed	36%	32%	52%	43%
Blue Collar, Workers & Sale Service	22%	25%	27%	34%
Retired, Unemployed & Housewife	13%	11%	17%	24%
Others	42%	50%	33%	18%

As shown in Table 1.8, the Internet penetration rates in job categories of civil servants, students, and managerial/professional/white-collar workers are significantly higher than other occupation groups, accounting for 89%, 86%, and 78% respectively. Previous survey results show that those in high-prestige and high-income occupations and students are more likely to go online than their low-prestige and low-income job holders and the unemployed. The rates among individuals engaged in blue-collar jobs, sales, service, and the jobless are comparatively low. Interestingly, the penetration rates in the self-employed fluctuated over the surveyed years. The dramatic decrease in 2006 was a case in point. One of the reasons for the fluctuation may be the rise in job mobility under rapid economic development.

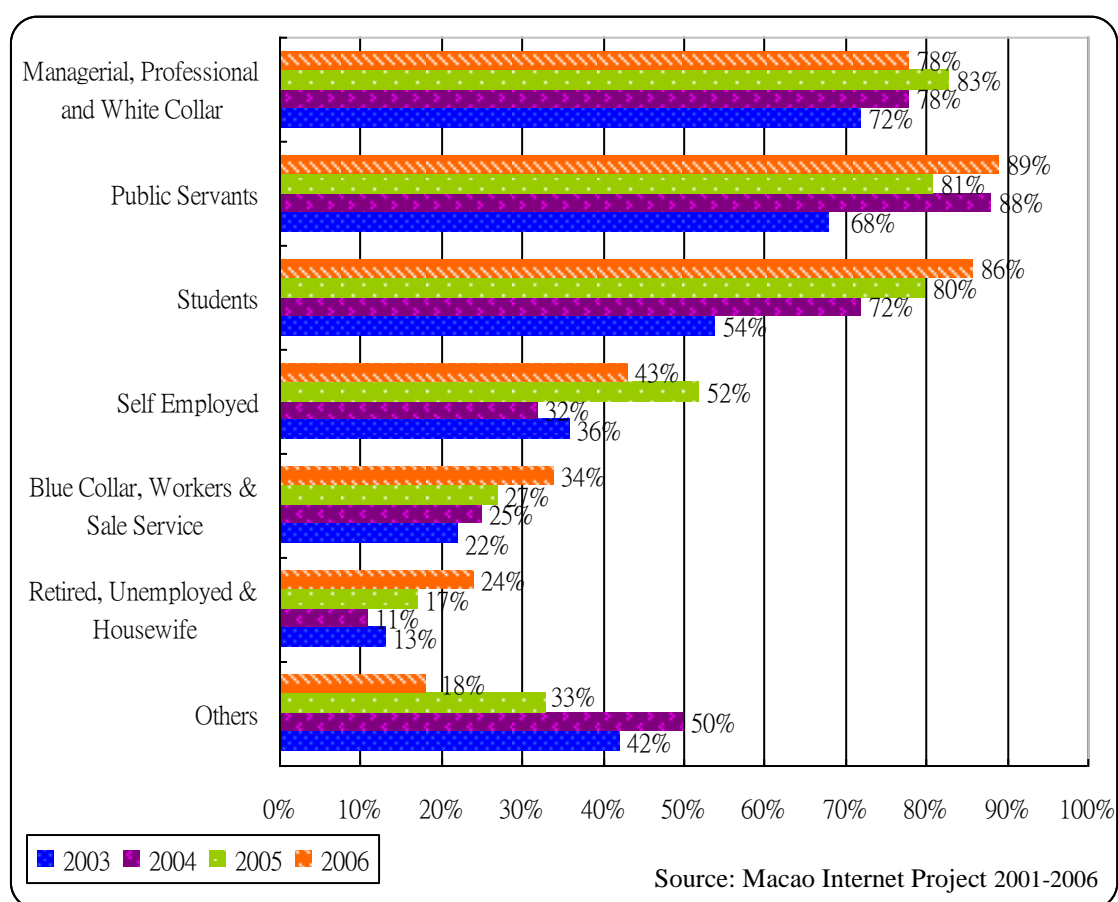


Chart 1.7 Internet Penetration Rate by Occupation

4. By Education

	2003	2004	2005	2006
Junior Middle School or less	23%	26%	32%	37%
Senior Middle School	54%	65%	70%	70%
Associate Degrees	80%	90%	80%	85%
University Degree	91%	86%	92%	92%
Postgraduate Degree	88%	100%	94%	100%

As shown in Table 1.9, all respondents holding at least a postgraduate degree were Internet users, without exception, followed by those with an undergraduate degree and an associate degree, accounting for 92% and 85% respectively. Over the surveyed years, figures show that the higher the educational level, the higher the Internet penetration rate, with the only exception in 2004. It seems as if a college degree makes a sure ticket to the world of the Internet.. The rate is comparatively low for those with senior middle school degree or below.

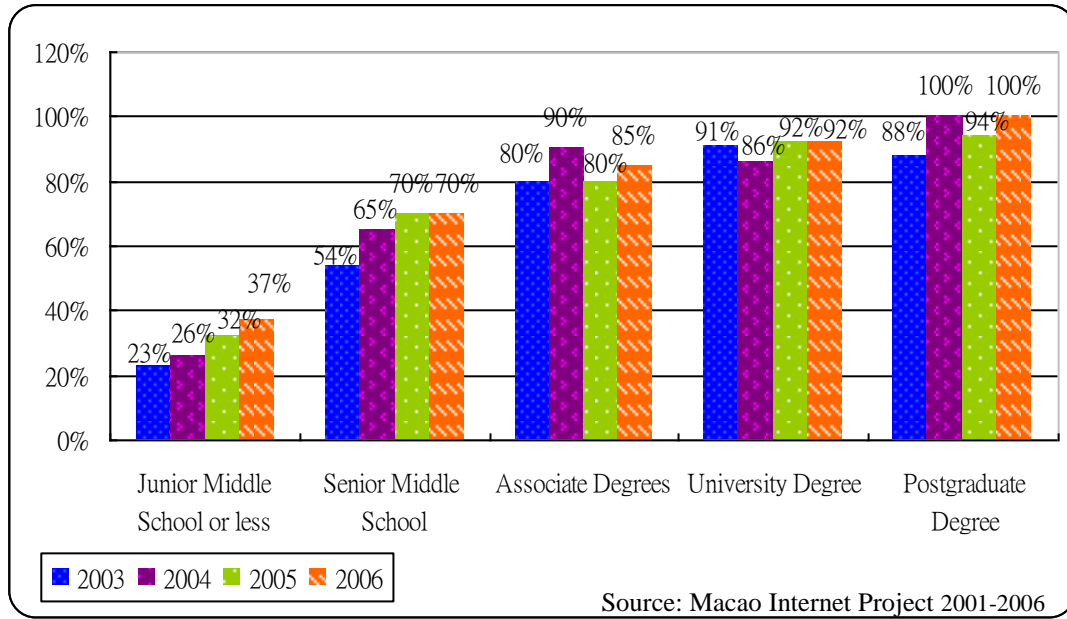


Chart 1.8 Internet Penetration Rate by Education

5. By Marital Status

	2003	2004	2005	2006
Married	27%	27%	35%	35%
Unmarried	56%	69%	73%	83%

Table 1.10 shows that compared with the married (35%), the Internet penetration rate in the unmarried population was much higher (83%) in 2006. There was a 10 percent point increase in the penetration rate for the unmarried whereas the rate remained the same for the married in 2005 and 2006.

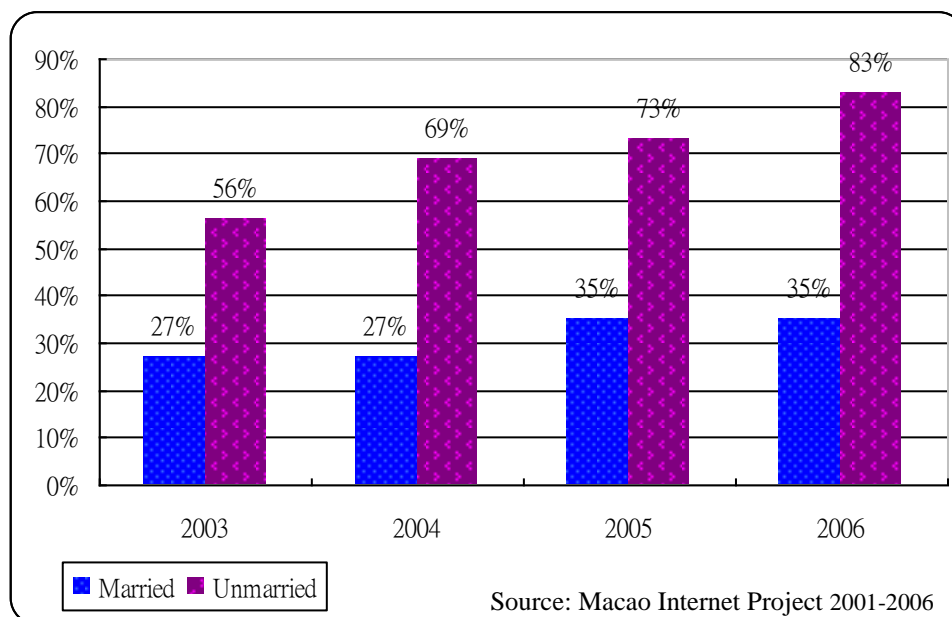


Chart 1.9 Internet Penetration Rate by Marital Status

6. Monthly Household Income (Macao dollars, MOP)

	2003	2004	2005
<\$6,000	20%	14%	21%
\$6,000-\$12,000	40%	44%	40%
\$12,000-\$18,000	54%	55%	66%
\$18,000-\$24,000	69%	66%	78%
>\$24,000	75%	84%	90%

Figures in Table 1.11 show that people with higher family income are more likely to be Internet users than those with lower family income. We found that the penetration rates among different income groups tended to decrease in 2006, due probably to under-representation where 20% of the respondents did not provide answers, among whom 60% were users.

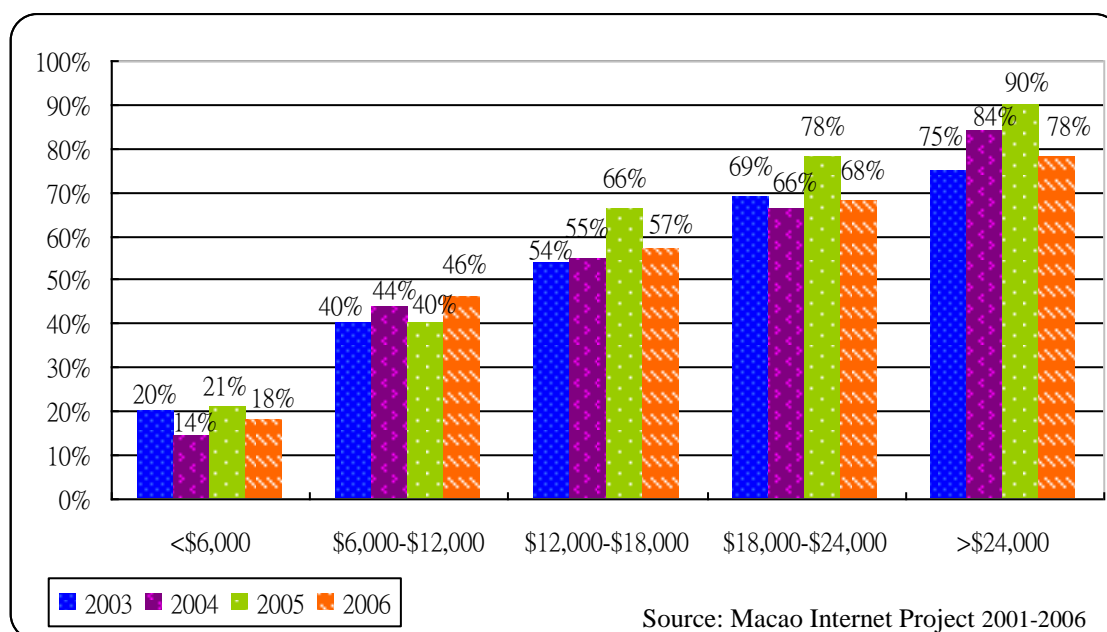


Chart 1.10 Internet Penetration Rate by Monthly Household Income

B. Behavior and Perception of Internet Users

Unless otherwise indicated, the term “Internet users” is defined by the CNNIC criterion (i.e., 6-84 years old). Questions with “*” are adopted from the offline survey of CNNIC whereas questions without “*” are specifically designed for the Macao survey.

a. Individual Characteristics

*1. Gender Distribution:

Male	Female
51%	49%

Table 2.1 shows a gender distribution of 51% males and 49% females. No statistically significant differences were observed between the two groups after removing sampling errors.

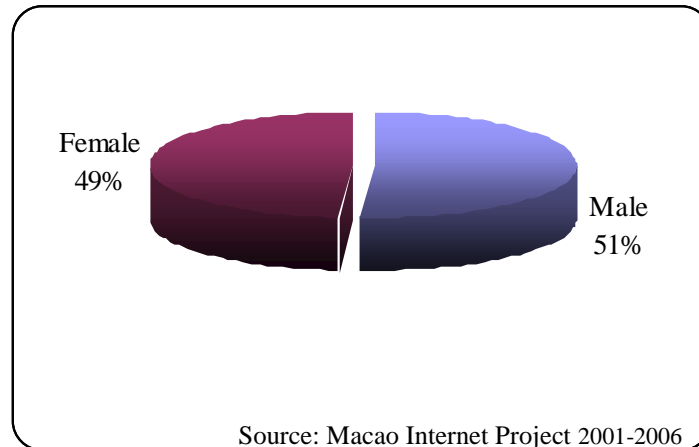


Chart 2.1 Gender Distribution of Internet Users

***2. Age Distribution:**

below 18 years old	18-24 years old	25-30 years old	31-35 years old	36-40 years old	41-50 years old	51-60 years old	above 60 years old
27%	20%	16%	9%	10%	13%	4%	1.2%

Table 2.2 shows an interesting age gap whereby those aged 24 or below take up nearly half of the total users whereas those aged above 50 account for only 5.2% of the total users.

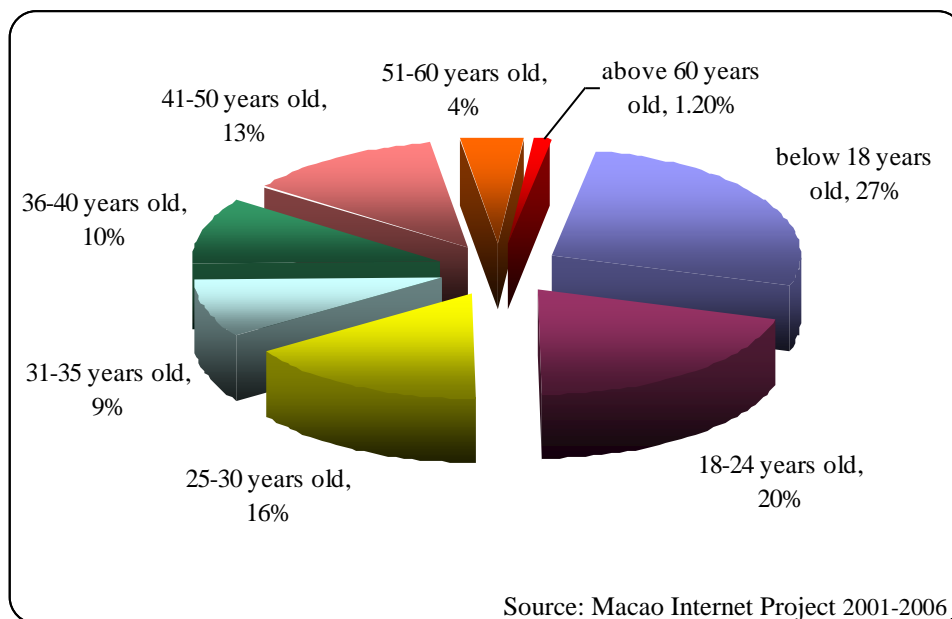


Chart 2.2 Age Distribution of Internet Users

***3. Marital Status:**

Table 2.3 Marital Status of Internet Users	
Married	Unmarried
37%	63%

Table 2.3 shows penetration rate by marital status (63% among unmarried and 37% married).

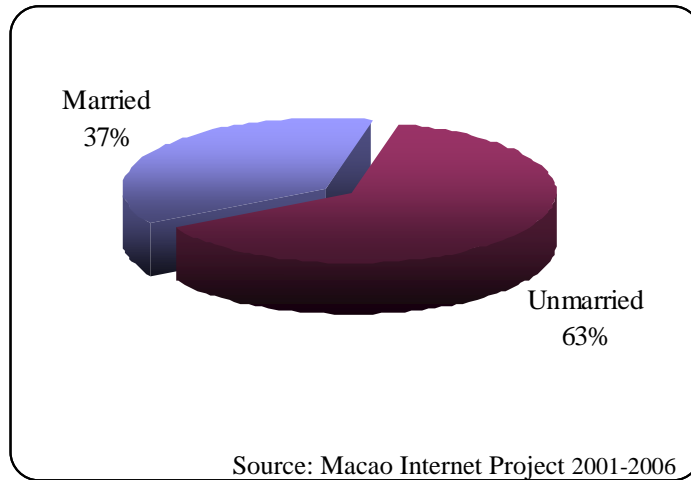


Chart 2.3 Distribution by Marital Status of Internet Users

***4. Education Level of Internet Users:**

Table 2.4 Education Levels of Internet Users				
Junior Middle School or less	Senior Middle School	Associate Degrees	University Degree	Postgraduate Degree
37%	31%	7%	22%	3%

Table 2.4 shows that among users, more than two-thirds hold a senior middle school degree or below. While 22% of the users have a university degree, those with an associate degree and a postgraduate degree account for 7% and 3% respectively.

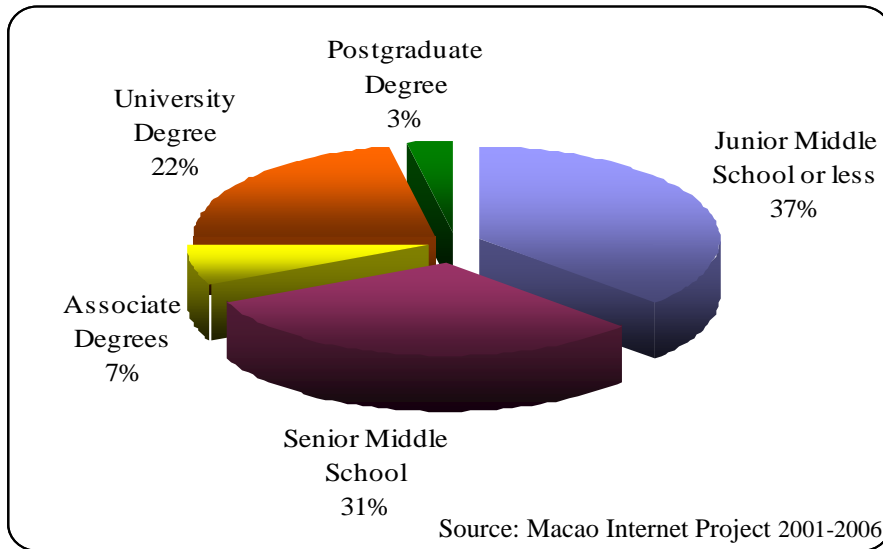


Chart 2.4 Education Levels of Internet Users

***5. Occupational Distribution:**

Public Servants	Managerial, Professional & White-Collar Workers	Worker & Sales Assistant	Self Employed	Students	Retired & Unemployed	Others
6%	27%	17%	2%	39%	9%	0.4%

Table 2.5 shows that students as well as managerial/professional/white-collar workers make up the majority of Internet users, accounting for 39% and 27% respectively. Menial laborers and sales assistants had only a meager 17% share and other categories account for even less.

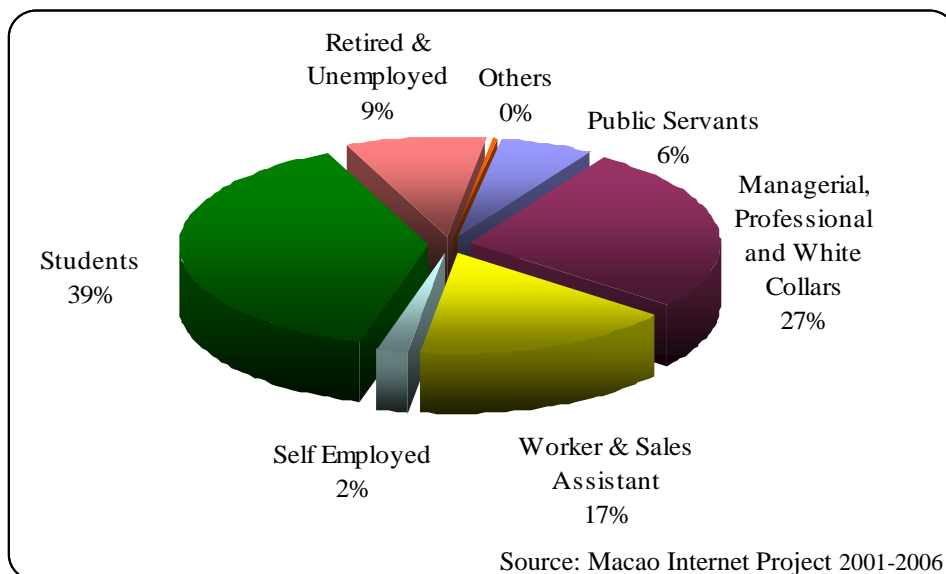


Chart 2.5 Distribution by Occupation of Internet Users

***6. Family Income (Macao dollars):**

Table 2.6 Family Income Distribution of Internet Users				
<\$6,000	\$6,000-\$12,000	\$12,000-\$18,000	\$18,000-\$24,000	>\$24,000
6%	27%	22%	17%	29%

As shown in Table 2.6, families with lower income take up the least proportion in Internet use while those with higher income boast the lion's share. To illustrate, compared with the rate among families earning less than MOP 6,000 monthly (6%), the percentage was 29% in families earning MOP24,000 or above per month.

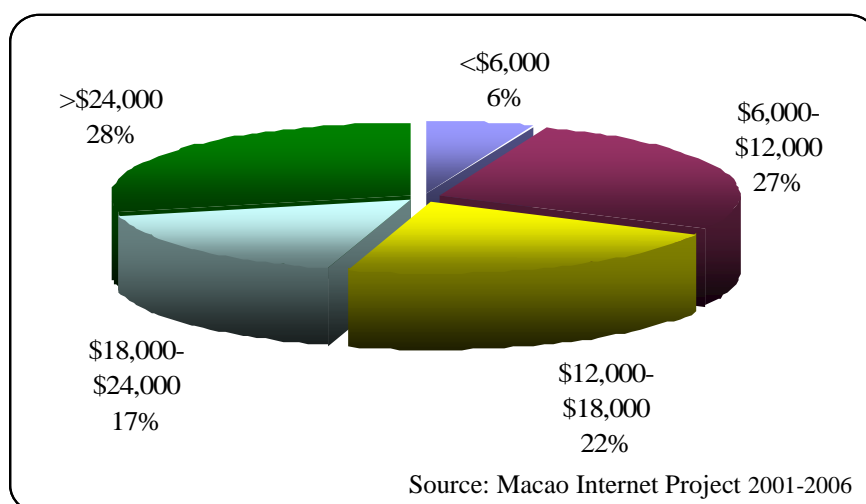


Chart 2.6 Family Income Distributions of Internet Users

b. Internet Usage and Online Behavior

***1. Where to Get Online (multiple selection allowed):**

Home	Office	School	Internet Café,	Library	Others
94%	23%	18%	3%	6	0%

Table 2.7 shows that the majority of users (94%) usually go online at home, followed by office, school, and other public places, accounting for 94%, 23%, 18% and 9% respectively.

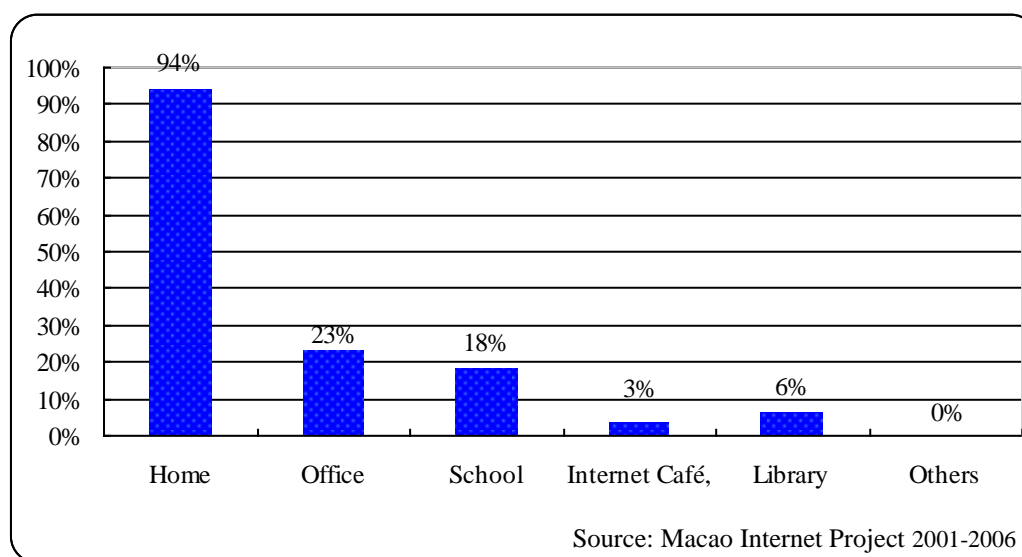


Chart 2.7 Where Users Go Online

***2a. Monthly Spending on Internet Connection:**

<MOP\$51	MOP \$51-100	MOP \$101-200	MOP \$201-300	MOP \$301-400	MOP \$401-500	> MOP \$500
2%	28%	46%	17%	4%	1.3%	2.5%

Table 2.8 shows that online households spend an average of MOP175 (USD\$22) per month on Internet connection. Nearly half of the households spend between MOP101 to MOP200 per month while less than 4% of the households' spending exceeds MOP400 and 2% spend less than MOP50 monthly.

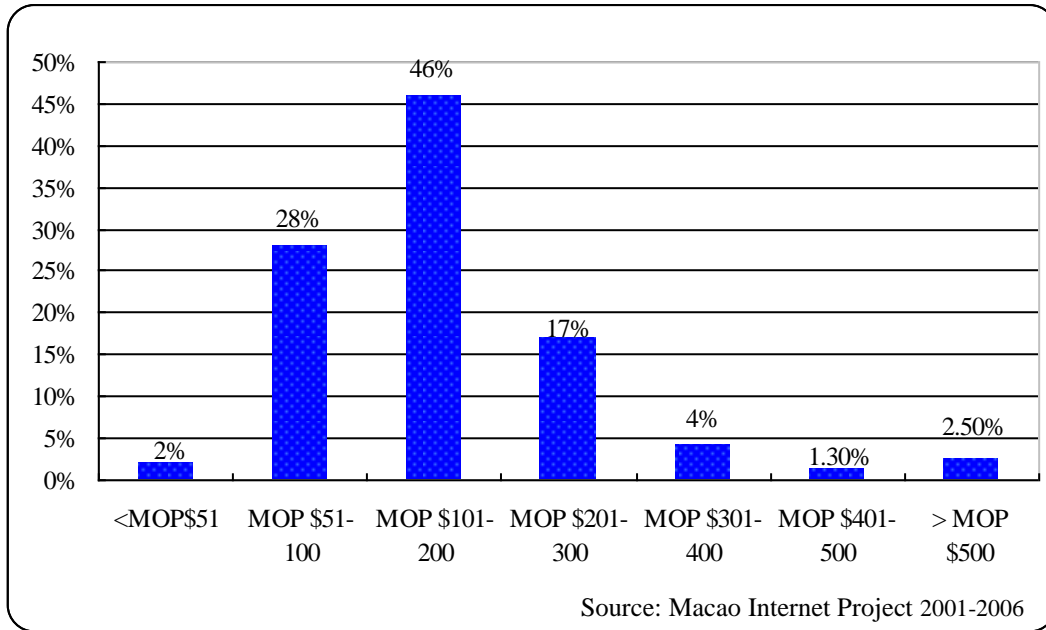


Chart 2.8 Monthly Expenditure on Internet Connection (MOP\$)

***2b. Online History:**

2 years or fewer	19%
2-4 years	36%
5-7 years	26%
7 years or more	18%

Table 2.9 shows that 36% of the users have two to four years of online experience, 26% of five to seven years, 19% of less than two years, and 18% of more than seven years. The survey results also reveal that the average online experience is four and a half years. The most experienced users have gone online for 16 years whereas the least experienced have connected to the Internet for less than one month.

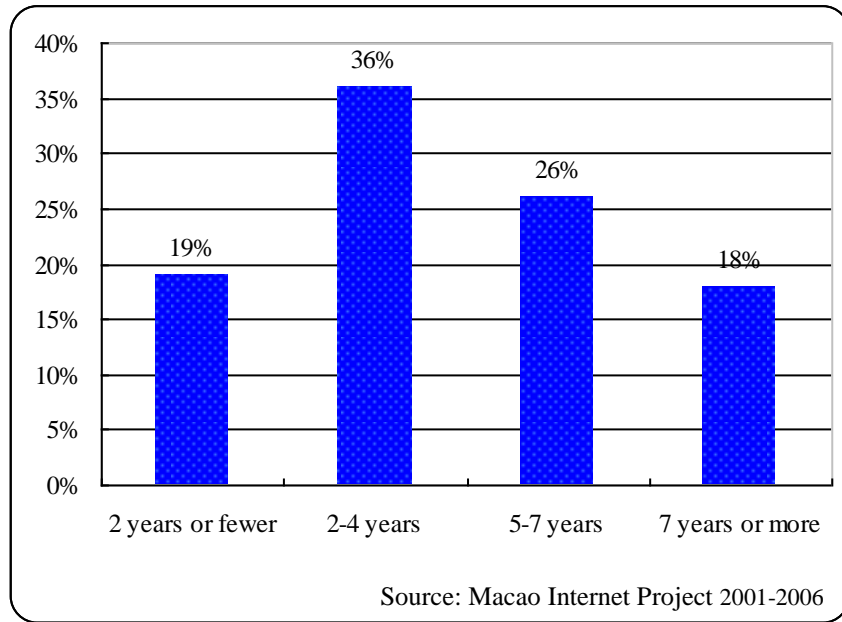


Chart 2.9 Online History

***2c. Methods of Internet Connection (multiple selections permitted):**

Broadband	89%
Telephone dialup	10%
Wireless (including WLAN, GPRS, WAP, WiFi)	11%
Leased line	1%
Don't know	3%

Among the users, 89% go online using broadband and 10% via dialup. Interestingly, 11% of our respondents claimed that they used wireless connection, a figure somewhat exceeding our expectations. Among wireless users, 54% use the wireless devices within the household radius and only 3.7% use wireless connection at the hot spots set up by the Internet Service Provider (ISP).

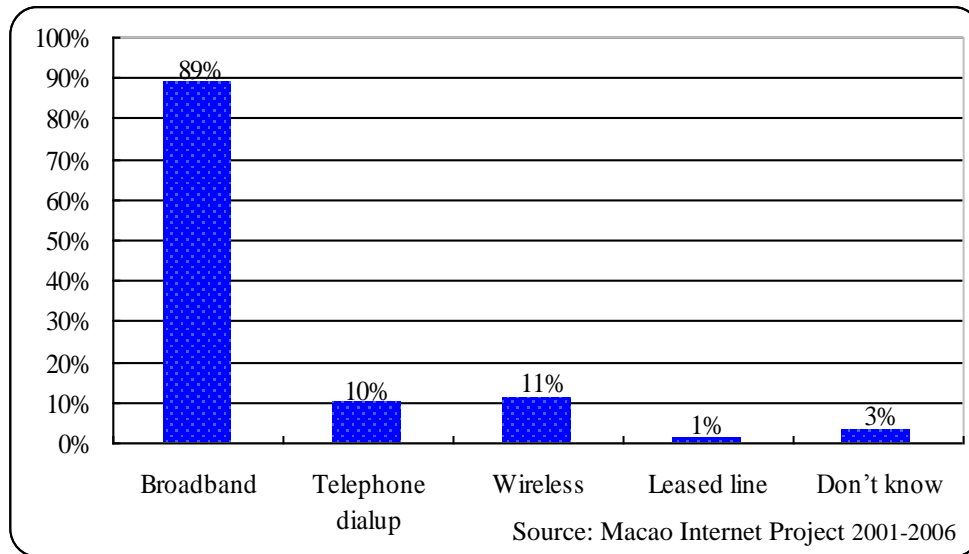


Chart 2.10 Methods of Internet Connection

***3. Average Hours of Internet Use per Week:**

Internet Users	15.9 hours/user
6-17 years old	12.8 hours/user
18-84 years old	17.0 hours/user

The survey results show that users spend an average of 15.9 hours per week on the Internet. When looking into different groups, we found that youngsters spend 12.8 hours and adults spend 17 hours weekly, showing a significant 4.2 hours difference between the two groups.

4. Average Days of Internet Use per Week:

The survey results reveal that users normally go online for an average of 5 days per week.

***5. Time of the Day Using the Internet (multiple selections permitted):**

1:00	2:00	3:00	4:00	5:00	6:00
8%	5%	3%	1%	1%	1%
7:00	8:00	9:00	10:00	11:00	12:00
1%	1%	8%	10%	10%	9%
13:00	14:00	15:00	16:00	17:00	18:00
8%	10%	12%	14%	18%	23%
19:00	20:00	21:00	22:00	23:00	24:00
30%	44%	53%	52%	35%	25%

Table 2.12 shows that more and more users go online between 2 o'clock in the afternoon and midnight. The prime time is from nine to ten at night while the low tide is from four to eight in the morning.

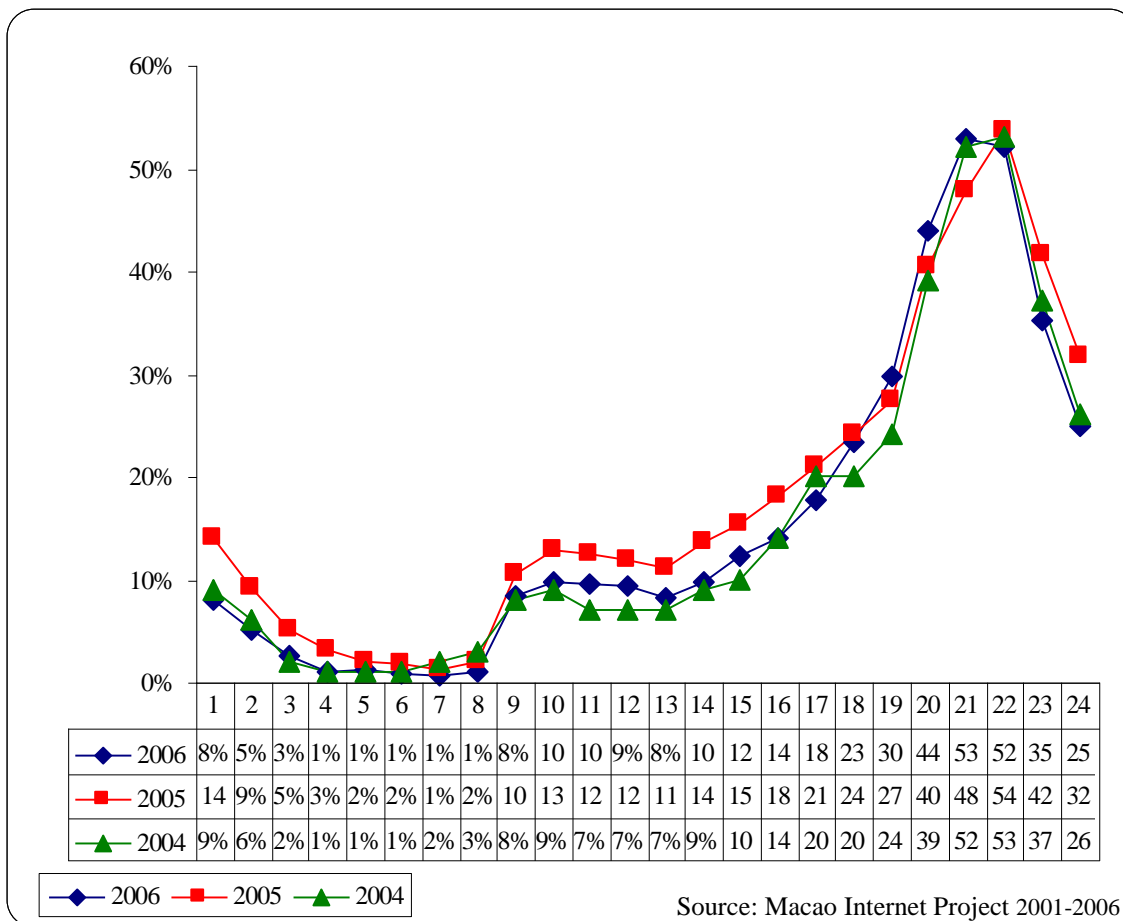


Chart 2.11 Daily Cycles of Online Activities

6. Frequency of E-mail Use:

Table 2.13		Frequency of E-mail Use
Several times a day		6%
Daily		27%
Weekly		31%
Monthly		7%
Less than monthly		7%
Never		22%

The survey found that 22% of the users never used e-mails while nearly two-thirds of the users utilized e-mails on a daily or weekly basis.

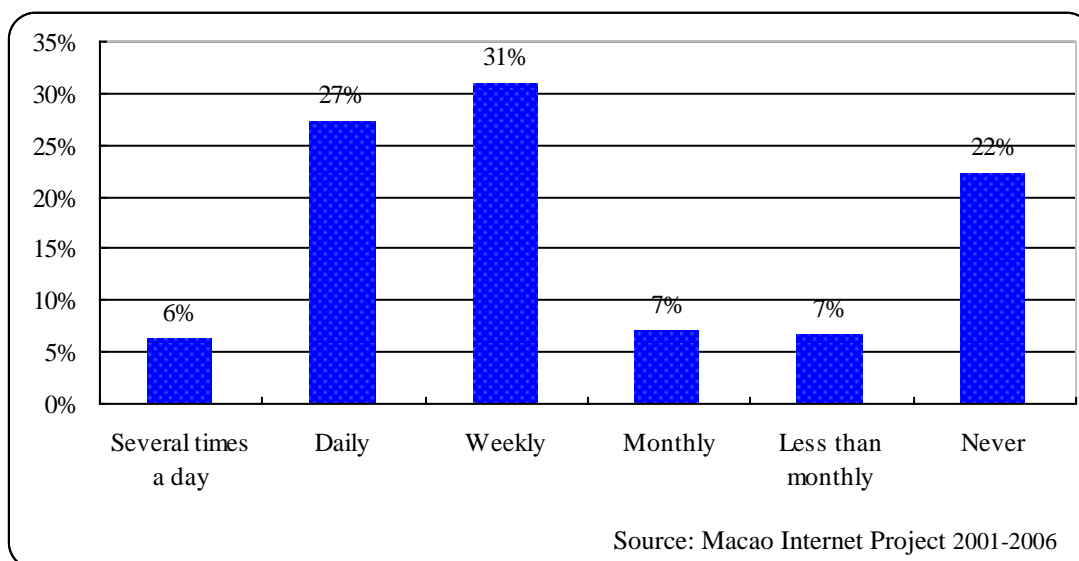


Chart 2.12 網民使用 E-mail 的頻率

7. Use of Spamming Software:

Table 2.14 Use of Spamming Software	
Yes	38%
No	55%
Don't know	8%

Among the e-mail users, less than 40% applied some form of anti-spam applications, but more than half did not bother, which indicates a rather weak level of awareness of junk-mail prevention among the majority of e-mail users.

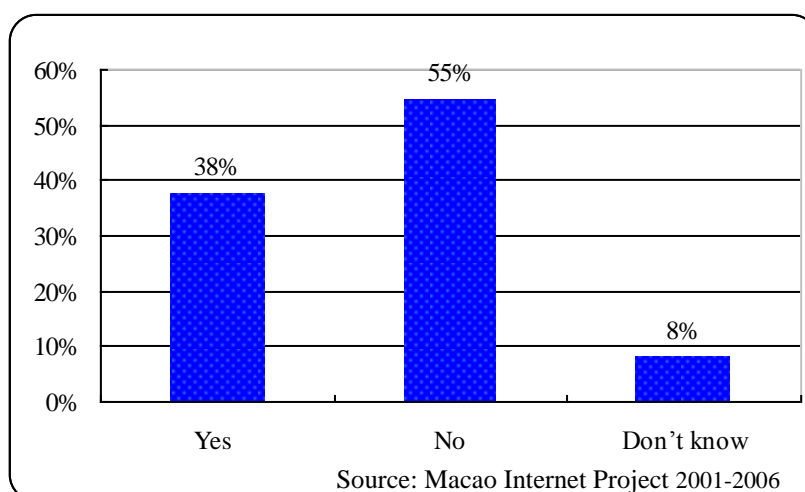


Chart 2.13 Use of Spamming Software

***8. Primary Purposes for Internet Use (multiple selections permitted):**

Information acquisition	73.3%
Communication	48.4%
Leisure and entertainment	42.5%
Online News	37.2%
Study	12.3%
Software download	13.6%
Virtual community	7.7%
Online finance	5.8%
Online public service	7.1%
Online shopping	3.8%
Online job	4.8%
Webpage authoring	7.3%
Online gaming	0.9%
Internet phone	1.8%
Purchase of goods or services	0.9%
Others	1.5%

As shown in Table 2.15, one major online activity is information acquisition, followed by communication, leisure and entertainment, and online news browsing.

8b. Reading Online News:

	Never	Less than monthly	Monthly	Weekly	Daily	Several times a day
Reading online news	20%	9%	8%	27%	34%	3%

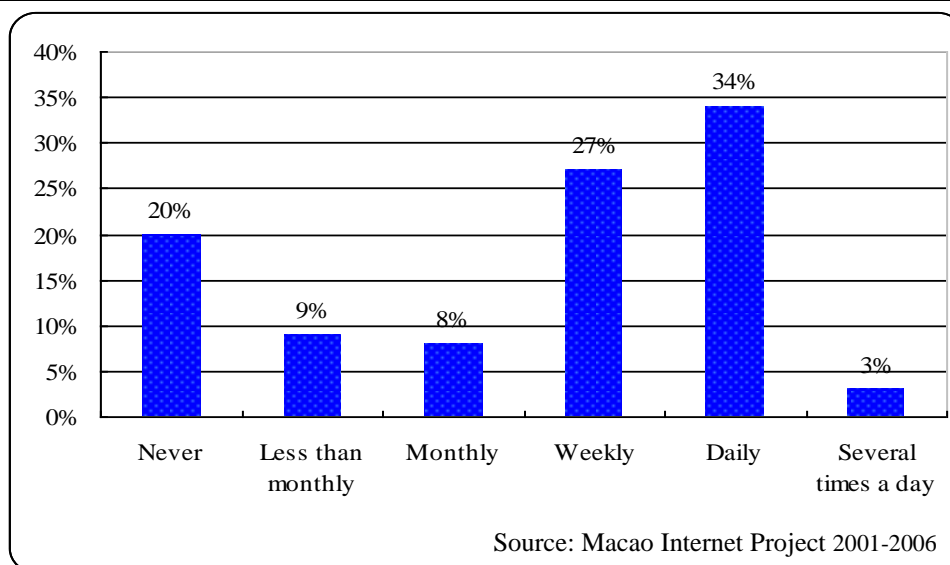


Chart 2.14 Reading online news

8c. Type of Online News (multiple selections permitted):

Local News	75.7%
Hong Kong News	71.5%
International News	27.3%
China News	24.8%
Taiwan News	21.1%

As shown in Table 2.16 and Table 2.17, 20% of the users never read online news while 37% read everyday. Of the readers, Macao local and Hong Kong news made up the staple, accounting for 75.7% and 71.5% respectively.

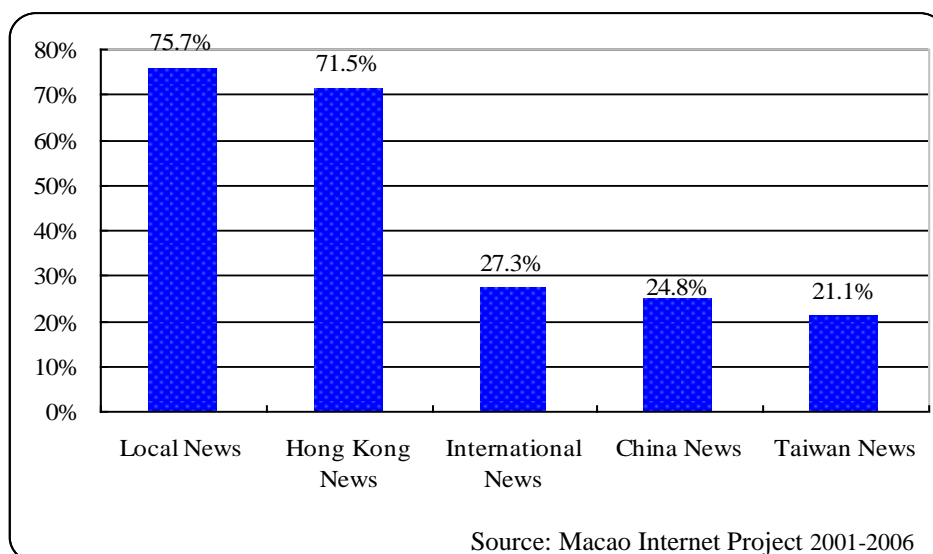


Chart 2.15 Type of Online News

***9. Purchase of Goods or Services Online within the Last 12 Months:**

Yes	15%
No	85%

* By WIP definition

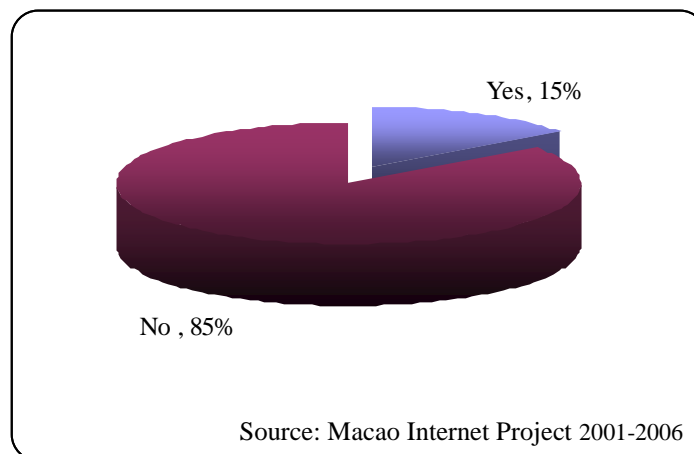


Chart 2.16 Online Purchase Experience

***10. Goods or Services Purchased within the Last 12 Months (multiple selections permitted):**

Books	35%
Electric appliances (Do not include computers)	23%
Traveling (air/train tickets, hotels)	20%
Cloths	17%

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Stock investment	14%
Houseware or art crafts	9%
Audio/Video products	8%
Computers	6%
Food	3%
Others	27%

* WIP definition

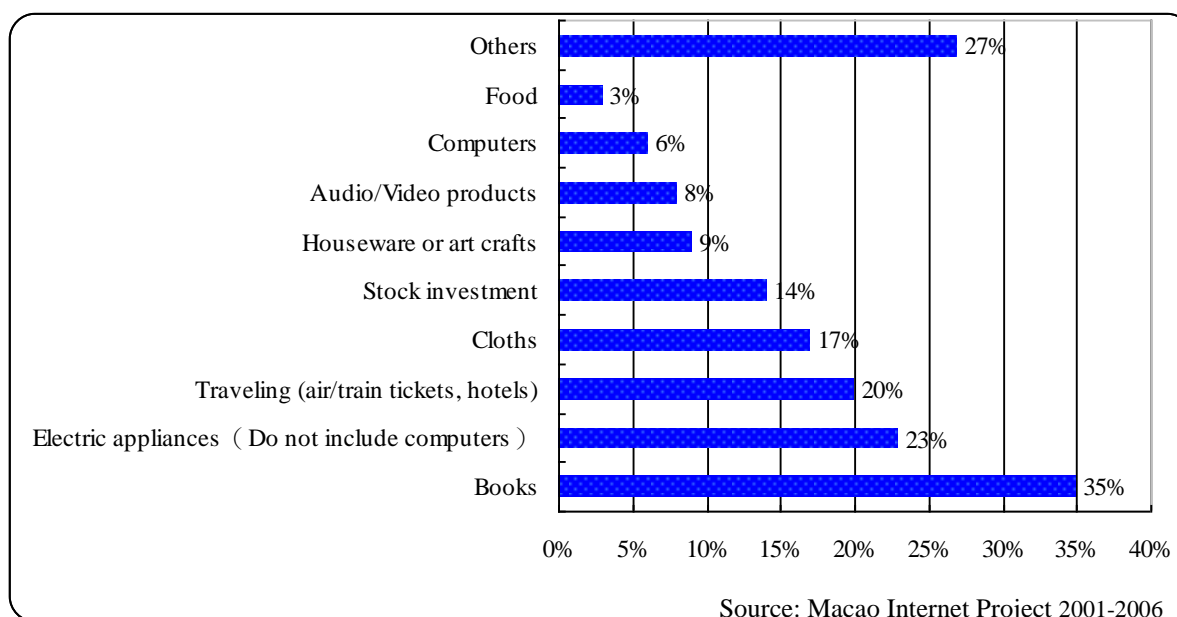


Chart 2.17 Types of Goods or Services on the Internet

The survey results show that in 2006, some 15% of the users had the online purchase experience, With the most popular items being books, electric appliances (excluding computers), traveling products, and cloths. We also found that 14% of the respondents use the Internet for stock or fund investment.

11a. Average Hours per Week on Six Major Online Activities:

Table 2.20 Average Hours per Week Activates Online:				
	2003	2004	2005	2006
Information acquisition	4.1	4.3	4.8	5.0
Online chat (e.g., MSN, ICQ)	-	1.9	3.2	5.0
Reading online news	2.0	2.5	2.5	2.9
Receiving/sending E-mails	1.9	2.7	2.4	2.0
Playing online games	1.7	1.1	1.3	2.0
Participating in online chatting or discussions	2.3	0.5	0.8	1.7

* By WIP definition

Table 2.20 and Chart 2.18 show that users devote their time mainly to information acquisition, reading online news, and handling e-mails in the past four years. As instant messaging is becoming more and more

popular, users spend more time on such activities. In 2006, instant messaging and information acquisition became the two most active online activities for users.

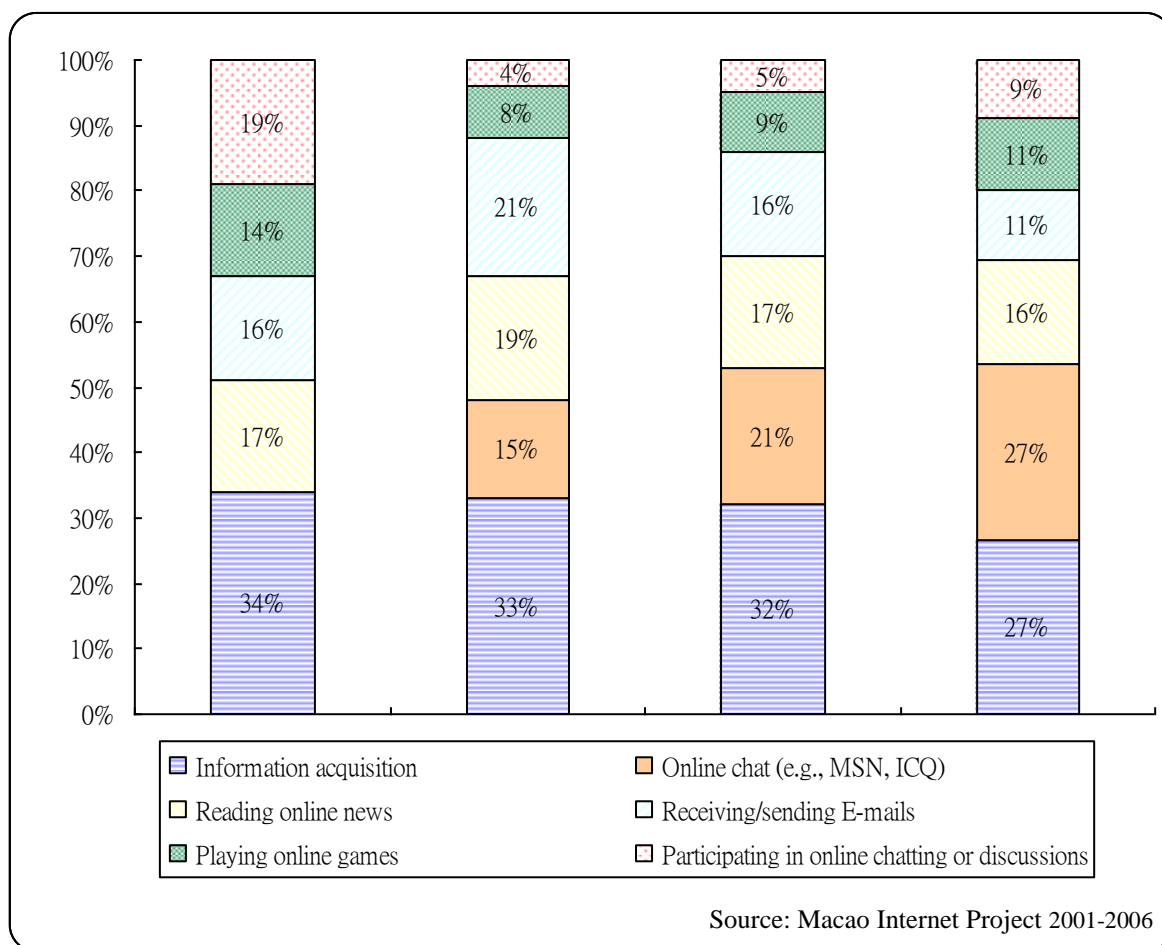


Chart 2.18 Average Hours per Week Activates Online

11b · Multi-tasking :

No	31%
YES, sometimes	24%
YES, most of the time	45%

The 2006 survey found that nearly 70% of the Internet users sometimes or most of the time were committed to more than one activity at the same time while they were online. About 45% of respondents revealed that they did multi-tasking most of the time when being online.

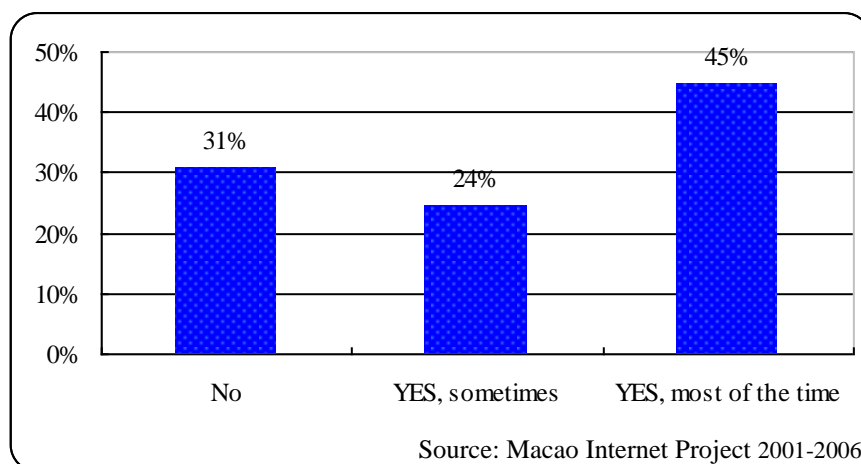


Chart 2.19 Do more than one activity while online

12a. Most Frequently Browsed Websites (by regions) (multiple selections allowed):

	2004	2005	2006
Hong Kong websites	78%	77%	80%
Macao websites	40%	40%	43%
Taiwan websites	25%	23%	27%
Chinese mainland websites	17%	22%	25%
Overseas websites	13%	15%	17%
Others	1%	1%	0.4%
Don't know/ Hard to say	-	-	5%

For the past three years, neither the type nor the frequency of frequently browsed websites registered any significant change. In 2006, major websites browsed were from Hong Kong (80%), followed by Macao websites (43%), Taiwan websites (27%), mainland Chinese websites (25%), and overseas websites (17%). It should be noted that the browsing of mainland Chinese websites was on the rise, from 17% in 2004 to 25% in 2006.

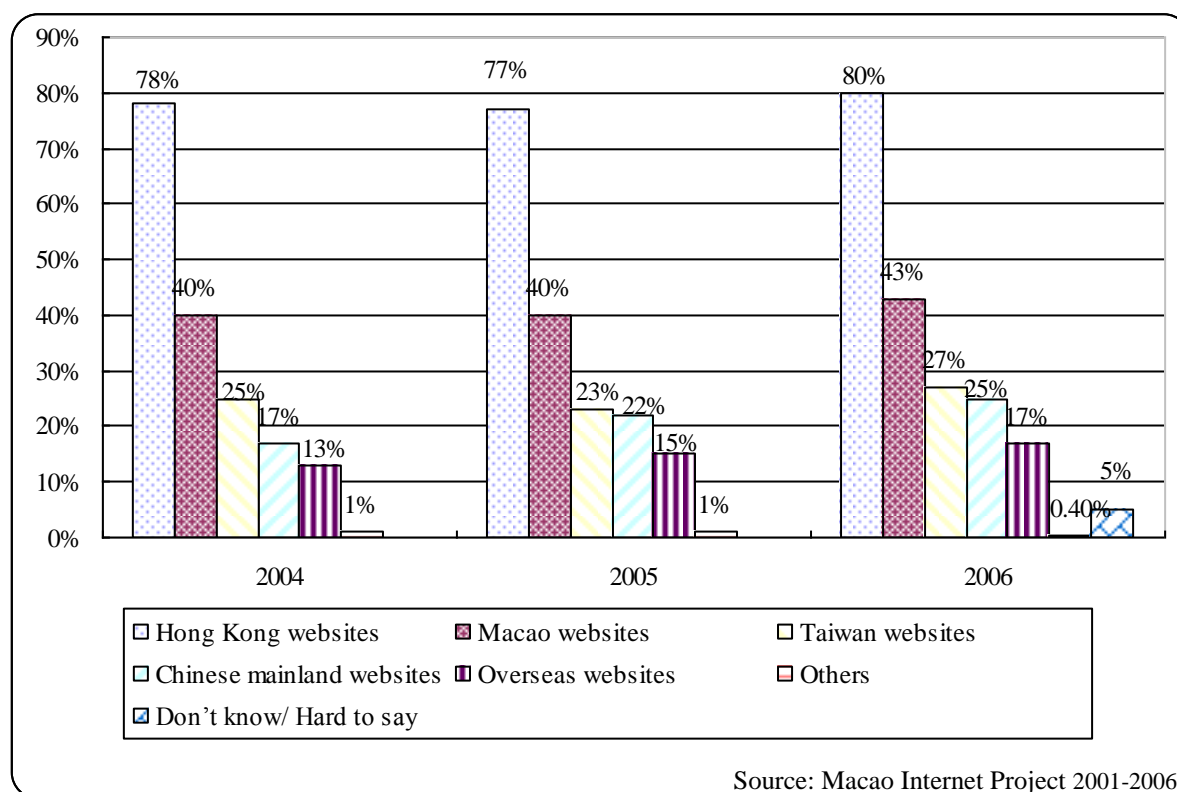


Chart 2.20 The Websites that Users Browsed Frequently (by regions)

12b. Most Frequently Browsed Websites (by categories) (multiple selections allowed):

Major portals, e.g. Sina, Yahoo, CTM, etc.	62%
Search Engines, e.g. Google, Baidu, Yahoo, etc.	53%
Entertainment websites	26%
News websites	24%
Online games websites	17%
Company/ School websites	17%
Instant Messaging websites, e.g. MSN, ICQ, etc.	16%
Video sharing websites, e.g. YouTube, Myspace, etc.	9%
Classmate/myself websites	7%
Finance/Banking websites	7%
Blog websites	6%
Others websites	6%

In 2006, hot websites were mostly informational, such as the major portals and search engines, accounting for 62% and 53% respectively. Entertainment and news websites accounts for about 20% respectively.

13a. Frequency of Using the Government Websites

	2005	2006
Every day	7%	6%
Several times a week	18%	14%
Several times a month	24%	29%
Several times a year	17%	15%
Never	30%	35%
Don't know/hard to say	4%	2%

* WIP definition

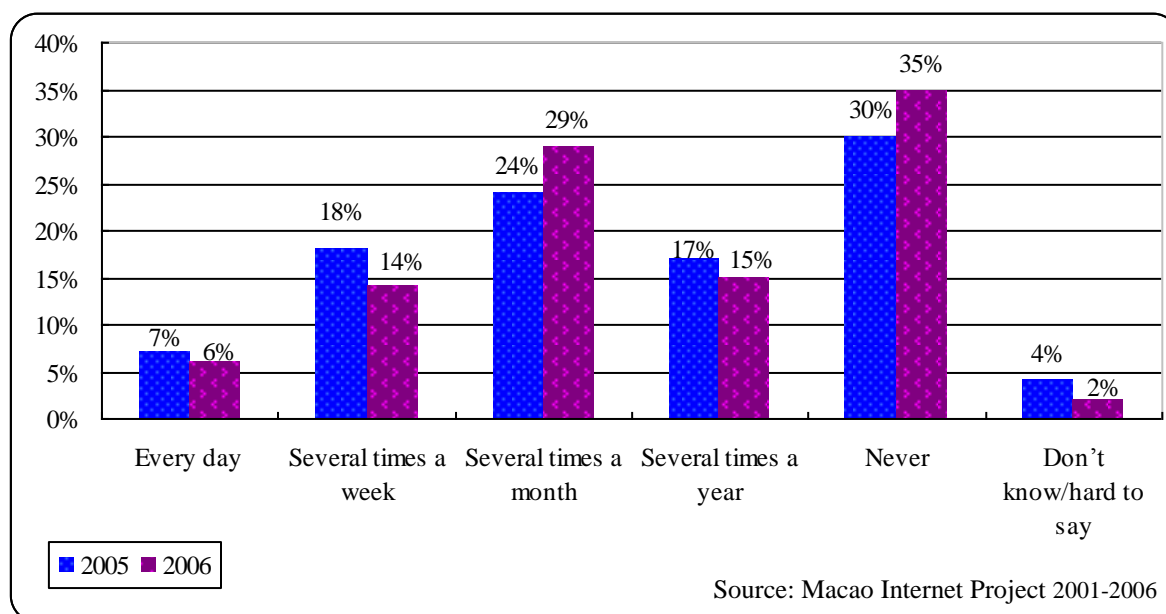


Chart 2.21 Frequency of Using the Government Websites

13b. The e-Government Services Used (multiple selections allowed):

	2005	2006
Search Information	95%	92%
Download Application Form	15%	19%
Download Information	16%	16%
Inquiries (E-mail, message board etc.)	19%	15%
Complain (E-mail, message board etc.)	3%	3%
Advice (E-mail, message board etc.)	–	2%
Others	6%	7%

* By WIP definition

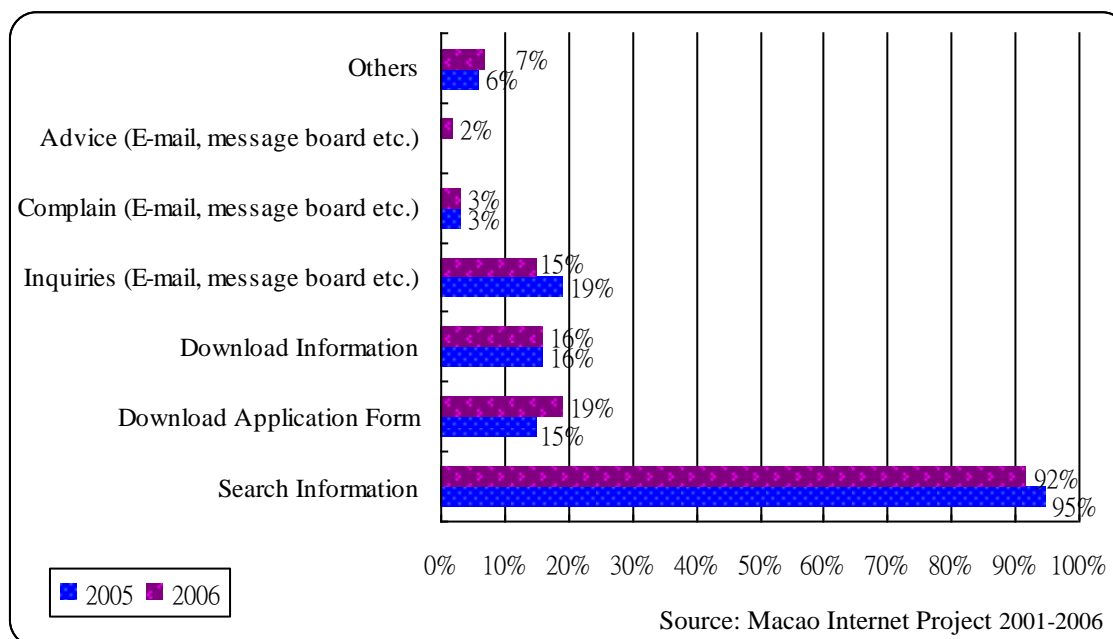


Chart 2.22 The e-Government Services that Users Used

More than 30% of the users claimed that they rarely or never used services provided by the government websites in 2005 and 2006. While less than 10% browsed government websites everyday, 29% visited these websites several times a month. Of those using the government websites, an overwhelming majority (more than 90%) went to search for information and less than 20% made inquiries as well as downloading information and forms. Those who lodged complaints through the websites account for only 5%. Survey results from the past two year indicate a stagnant development of usage of the government websites.

c. Internet Non-Users in Macao

*1. Reasons for Not Using the Internet (multiple selections permitted):

Table 3.1 Reasons for Not Using the Internet				
	2003	2004	2005	2006
Don't know how to use/lack of skills	33%	33%	37%	43%
Too busy to have time	17%	25%	20%	26%
Feel the Internet useless/no such need	11%	17%	19%	16%
No interest	10%	11%	17%	14%
No computers/ facilities	17%	14%	15%	16%
Too expensive	5%	5%	6%	5%
Worry about bad influences on children	3%	5%	4%	2%
Parents don't allow	5%	3%	3%	2%
Computer not good enough	1%	1%	2%	2%
Insufficient Chinese information//Don't know English	1%	1%	1%	2%

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Concerns about online security	0.4%	0.3%	1%	0.4%
Too scarce of useful websites/information	0.1%	0.2%	1%	1%
Transmission speed too slow	1%	-	1%	0.3%
Concerns about breach of privacy	0.1%	-	0.4%	0.2%
Too many viruses	0.1%	-	0.3%	-
Can't find what they need	-	-	0.3%	1%
Frequently disconnected/difficult to connect	-	0.1%	-	0.1%
Others	4%	9%	7%	4%
Don't know/no reason	6%	4%	5%	2%

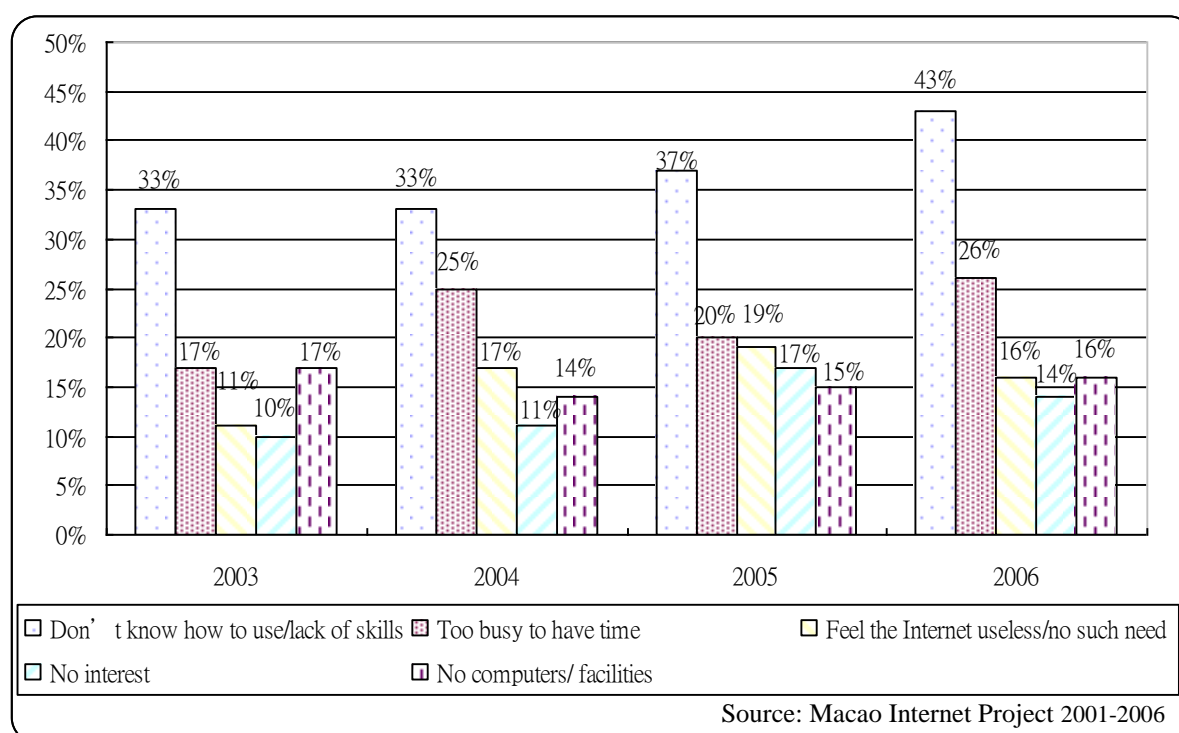


Chart 3.1 Reasons for Not Using the Internet

Results from the four survey show that the major reasons for people not using the Internet are “don't know how to use/lack of skills,” “no time,” “no need,” “no interest,” and “no computers/facilities.” The 2006 survey found that 43% of the non-users lack relevant skills, 26% claim to have no time, 16% no need, 14% no interest, and 16% no facilities.

***2. Date Planned to Use the Internet:**

Within 1 month	3%
Within 2-3 months	4%
Within 4-6 months	4%

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Within 7-12 months	1%
1 year or later	2%
Don't know/hard to say	10%
Don't plan to use the Internet at all	75%

The 2006 survey found that 75% of the non-users do not have any plans to use the Internet. While about 10% of the non-users claimed that they would probably go online within the next six months, another 10% replied that it was hard to say or didn't know.

***3. Situations Encountered by Non-users as a Result of Not Using the Internet:**

	Never	Seldom	Sometimes	Frequently
1. Feeling of becoming old-fashioned	56%	8%	18%	18%
2. Encouraged by others to use the Internet	71%	7%	16%	6%
3. Excluded from the communication network among friends	95%	3%	1%	1%
4. Disadvantaged in hiring, promotion, or applying for schools	85%	6%	7%	2%
5. Told by friends that they have trouble contacting you	97%	1%	1%	1%
6. Feeling of knowing less news than others	69%	8%	14%	9%
7. Feeling of having less fun in life	76%	7%	11%	6%

The 2006 survey results show that between 17% and 36% of the non-users claimed that they sometimes or frequently felt that they were becoming old-fashioned, were encouraged by others to use the Internet, had a feeling of being less informed than others, and had less fun in life. It seems that some non-users still saw the Internet as a fad and its function as providing information and entertainment only. However, very few non-users felt that they had negative experiences on the net.

d. Perceptions of the Internet by Both User and Non-Users

***1. Do you trust the Internet?**

	Users	Non-users	Total
Fully distrust	4%	5%	4%
Somewhat distrust	18%	14%	16%
Partly trust, partly distrust	58%	32%	44%
Somewhat trust	17%	11%	14%
Fully trust	1%	2%	1%

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Don't know/hard to say	3%	37%	20%
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* By WIP definition

In terms of trusting the Internet, the 2006 survey revealed more or less the same percentage of respondents who trust and distrust the Internet while more than 40% expressed partial trust. On the whole, more users trust the Internet than non-users. For the non-users, 37% did not know enough about the Internet to form an opinion. In other words, users had clearer ideas about the Internet than non-users.

***2. Is information on the Internet accurate?**

Table 4.2 Evaluation of the Accuracy of Online Information			
	Users	Non-users	Total
Not at all	1%	3%	2%
A little	16%	16%	16%
Half	57%	40%	50%
Most	24%	13%	19%
All	1%	0.4%	1%
Don't know/hard to say	1%	28%	13%

* By WIP definition

Similar pattern was found in terms of the respondents' evaluation of the accuracy of online information. About 20% of the respondents were willing to go as far as saying that most or all the online information was accurate. Half of the respondents gave credits to half of the information. Again, users had a clearer idea about online information than non-users.

***3. Necessity for Control and Regulation of Internet Content:**

Table 4.3 Necessity for Control and Regulation of Internet Content			
	Users	Non-users	Total
Very unnecessary	3%	2%	3%
Somewhat unnecessary	16%	10%	13%
Somewhat necessary	50%	38%	45%
Very necessary	28%	30%	29%
Hard to say	4%	21%	11%

* WIP definition

It seems that Macao residents were cautious about the control and regulation of the Internet content. Nearly three fourths of the respondents saw a need for controlling and regulating the Internet content while only 10% or so believed otherwise. More users supported regulation than non-users. About 20% of non-users claimed that it was hard to say.

4. Are you willing to provide your personal information on the Internet?

Table 4.4 Willingness to provide personal information			
	Users	Non-users	Total
Completely no	50%	55%	52%
Somewhat no	39%	28%	35%
Somewhat yes	9%	7%	8%
Strongly yes	1%	1%	1%
Don't know/hard to say	1%	10%	5%

** By WIP definition*

5. Are you willing to provide your credit card information on the Internet?

Table 4.5 Willingness to provide credit card information			
	Users	Non-users	Total
Completely no	62%	70%	65%
Somewhat no	28%	13%	21%
Somewhat yes	6%	1%	4%
Strongly yes	1%	1%	1%
Don't know/hard to say	5%	15%	9%

** By WIP definition*

Table 4.4 and Table 4.5 indicate that the majority of the respondents expressed that they were not willing to provide personal or credit card information via the Internet. More users expressed opinions than non-users. More than 10% of the non-users did not know about the issue.

***6. Perceptions of the Functions and Impact of the Internet:**

Table 4.3 Perceptions of Internet Use						
	Highly disagree	Somewhat disagree	Partly agree, partly disagree	Somewhat agree	Highly agree	Don't know/Hard to say
Internet use can help enhance the efficiency of life	2%	11%	17%	49%	14%	7%
Internet use can make bad friends	5%	25%	17%	34%	9%	10%
Internet use can expose privacy	5%	29%	16%	31%	8%	12%
Internet use can	4%	21%	18%	37%	10%	11%

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make one vulnerable to bad information influence						
Internet use can easily make one addicted	3%	21%	12%	39%	15%	11%

* By WIP definition

Results in Table 4.6 show more respondents in agreement with the statement that Internet use could help enhance the efficiency of life. However, people also agreed that Internet use could lead to bad friends, could expose privacy, could make one vulnerable to bad information influence, and could be very addictive.

e. Concluding Remarks

In sum, the 2006 survey results, together with results from previous years, reveal the following characteristics of the development of the Internet usage in Macao.

First, from a macro point of view, there was a continuous increase in terms of the number of online computers and Internet penetration rate. However, while the growth in the number of online computers has kept its momentum; the pace of Internet penetration rates has slowed down, a likely indication that the number of Internet users attached to each online computer has reduced.

Second, the shift from dialup connection to broadband connection is apparent. Broadband connection has become a must in online connection.

Third, penetration rate has increased faster for men, younger people, civil servants and better educated individuals. The trend is rather labile for self-employed and other occupational groups. It is worth noting that Internet use has reached saturation among college graduates.

Fourth, Macao men and women are equally likely to be Internet users. The highest proportion of Internet users are taken up by youngsters under 24, students, unmarried people, and those who have a senior middle school degree or below.

Fifth, most people go online mainly at home during night time.

Sixth, the Internet is frequently used for its utilitarian functions (e.g., information searching, communication, and news exposure) more than its entertainment functions (e.g., online games and audio/video downloads). Instant messaging has become another important online activity.

Seventh, online time is on the steady increase. On average, each user spent 16 hours per week online, an increase of 3 hours compared to the average of 13 hours in 2005. This may be caused by more frequent use of instant messaging such as MSN. More than 40% of the users engage in multi-tasking activities while being online.

Eighth, users usually visited Chinese websites, of which Hong Kong websites receive the most clicks, followed by local Macao websites. There was also a trend for users to browse the

websites from the Chinese mainland.

Ninth, online purchase dropped slightly compared to 2005. The major items purchased online include books, electric appliances and traveling products. A minority of people (10%) also use the Internet for stock exchange and other trading transactions.

Tenth, as far as e-government is concerned, more than half of the users rarely or never used the government websites. More than 90% of the users mainly checked government websites for information and seldom used them for interaction purpose, not the least of which was lodging complaints and making suggestions.

Eleventh, the major reasons for non-users not using the Internet are lacking relevant skills, no time, and absence of need. Some non-users recognized the Internet as a trend and its positive function of providing information and entertainment. A few claimed that not using the Internet was associated with negative experiences when it comes to making friends, promotion/hiring and being contacted.

Finally, a fairly high proportion of the Macao residents cast doubts about or distrust the Internet. While nearly three-fourths of them claimed that the information on the Internet should be controlled and regulated, the majority of the people were not willing to provide personal or credit card information via the Internet. In addition, although people acknowledge the merits of the Internet in enhancing efficiency, a sizable portion of people admitted that the Internet would also bring negative impact. Generally speaking, Internet users articulated clearer ideas and expressed stronger attitudes towards the Internet than non-users.

PART III. Survey Methodology of Macao Internet Project

A. Study Population

The 2006 survey was carried out between December 4 and December 17, 2006. It was conducted by using a computer-assisted telephone interviewing (CATI) system, targeted at regular residents aged between 6 and 84 years old who speak Chinese (including Cantonese, Mandarin and other dialects) and live in Macao with a residential telephone line. Another target population is the 18-84 segment of the first population. The former makes it possible to conduct analysis in line with the CNNIC definition of Internet users while the latter enables analysis following the WIP definition.

B. Sampling Method

Sample Size: 1,800 residents were successfully interviewed in the survey. The sample size gives a sampling error of $\pm 2.4\%$ at the 95% confidence level.

Sampling Procedure: as in the three previous surveys, all Macao residential telephone numbers formed the sampling frame. In the first step, 7,540 telephone numbers were randomly selected by a computerized program. Then, with the assistance of the CATI system, all those numbers were dialed. When proven to be a residential number, interviewers requested a Chinese-speaking household person aged between 6 and 84, with the last birthday among other qualified members, to be interviewed. In the event of no answer from the dialed number, the chosen individual was not at home or unavailable for interview, interviewers made call backs up to ten times at different times of different days. Eventually, all numbers were used during the whole survey period.

Survey Response Rate: calculated by Response Rate Formulae 3 (RR3) and Cooperation Rate Formulae 3 (CR3) of the American Association for Public Opinion Research (AAPOR) (for details for http://www.aapor.org/default.asp?page=survey_methods/standards_and_best_practices/standard_definition#response), the response rate of the current survey is 46.4%, which is higher than those in the previous surveys, 45.3% in 2004 and 36.2% in 2005, and the cooperation rate is 67.2%.

C. Weighting Method

Prior to formal analysis, the data were weighted against the latest Macao Population Census Estimates, in terms of cross-distribution of age and gender. Consequently, the distribution of gender and age of the current sample resembles that of the population.

D. Data Cleaning

A series of mean figures have been reported above, such as average online time per user. As is

commonly known, mean averages are vulnerable to extremely large or small values in the data. We have therefore followed the customary practice in data processing: replacing extreme values (defined as larger or smaller than three standard deviations from the mean) with those equal to three standard deviations from the mean. Averages calculated from the adjusted data are generally about 2-23% smaller than the averages of the original data, which is closer to the parameters of the population.